



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/762,497	04/20/2001	Shojiro Kawakami	FUK-81	4970
22855	7590	02/15/2005	EXAMINER CURTIS, CRAIG	
RANDALL J. KNUTH P.C. 4921 DESOTO DRIVE FORT WAYNE, IN 46815			ART UNIT 2872	
PAPER NUMBER				

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AC

Office Action Summary	Application No. 09/762,497	Applicant(s) KAWAKAMI ET AL.	
	Examiner Craig Curtis	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Group Art Unit: 2872

DETAILED ACTION

Disposition of the Instant Application

- This Office Action is responsive to Applicants' Amendment filed on 3 December 2004, which has been made of record in the claim.
- By this amendment, Applicants have amended claims 1-7.
- Claims 1-7 are presently pending in the instant application.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Weber (US 5,422,756 A).

With regard to claim 1, Weber discloses (please see Figs. 1 & 2) the invention as claimed, a polarizer [10 in Fig. 1, an enlarged sectional view of which is shown in Fig. 2] comprising:

a multilayered structure having two or more transparent layers [viz., the composite optical stack 16 depicted in Fig. 2, comprising a repeating stack of a pair of transparent materials, that is, relatively low refractive index material 20, and relatively high index material 22] disposed along a z-axis of a three-dimensional orthogonal coordinate system (x,y,z) associated with the polarizer [please

Group Art Unit: 2872

see Fig. 2, it being conventional in the optical art to designate the orientation of the z-axis with respect to the entrance and exit surfaces of planar optical elements as being orthogonal thereto];

each said layer having a shape [please see Fig. 2], each said layer being a unit of lamination [*id.*], the shape of each said layer being in the form of an undulated structure [*id.*], said undulated structure consisting of a set of co-directed undulations [*id.*], said undulated structure being a regularly undulated structure [*id.*], wherein at least one of said layers has a variable thickness [please see column 4, lines 4-9], the lamination along the z-axis repeating the shape and being configured to polarize light incident upon said multilayered structure [please see layers 20 and 22 comprising multilayer structure (read: optical stack) 16 in Fig. 2].

With regard to claim 2, Weber further teaches wherein said polarizer has a first refractive medium layer containing at least one of Si and TiO₂ [viz, TiO₂: see column 5, lines 22-31] as a main component and a second refractive medium layer containing SiO₂ as a main component [*id.*].

With regard to claim 5, Weber further teaches wherein the respective shape of at least one of said layers has a regularly undulated structure along the x-axis and is uniform along a y-axis. Please see Figs. 1 and 2.

With regard to claim 6, Weber further discloses wherein the first refractive medium layer has a first index of refraction, said second refractive medium layer has a second index of refraction, said first index of refraction being greater than said second index of refraction. Please see column 5, lines 22-31, paying particular attention to the refractive index values respectively recited for TiO₂ (i.e., $n = 2.2-2.5$) and SiO₂ (i.e., $n = 1.45$).

Group Art Unit: 2872

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weber (US 5,422,756 A) in view of Merrill et al. (US 6,111,697).

With regard to claim 3, Weber discloses the claimed invention as set forth above, including wherein at least one of said first medium layer and said second medium layer have a variable thickness [please see column 4, lines 4-9], and in addition further provides a teaching wherein said substrate has, for the sake of example, a single set of regularly arranged, co-directed grooves [please see Figs. 1 and 2, visualizing the grooves that could be seen to exist in substrates 14 and 12 if optical stack 16 were to be removed from between said substrates 14 and 12] **EXCEPT FOR** an explicit teaching of providing that, in a method of producing a polarizer, said laminating be performed by a film-forming method at least partly including a step of sputter etching said first refractive medium layer and said second refractive medium layer.

Merrill et al., however, explicitly disclose a teaching in a method making an optical polarizer that lamination performed by a film-forming method at least partly include a step of sputter etching of polarization-sensitive layers [a teaching that encompasses such layers as the first refractive medium layer and the second refractive medium layer disclosed in the instant invention]. Please see column

Group Art Unit: 2872

18, lines 9-13. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the polarizer taught by **Weber** such that lamination be performed by a film-forming method at least partly including a step of sputter etching said first refractive medium layer and the second refractive medium layer, as taught by Merrill et al., for at least the purpose of, for the sake of example, optimizing (among other things) the transmission of light propagating through said polarizer.

With regard to claim 4, the combination explicitly discloses the claimed invention as set forth hereinbefore, including explicit teachings wherein said first refractive medium layer contains TiO_2 as a main component [please see **Weber**, column 5, lines 22-31] and a second refractive medium layer that contains SiO_2 [*id.*].

With regard to claim 7, the combination implicitly discloses, upon straightforward extension of the structural teachings of **Weber** as implicitly encompassing method step teachings, said method step teachings being modified, as set forth above, by **Merrill et al.**, including wherein said substrate (12 or 14 in Figs. 1 and 2 of **Weber**) has thin and long [both relative terms] grooves. Please see above, especially Figs. 1 and 2 in **Weber**.

Response to Arguments

Applicants' arguments filed on 12 November 2004 with respect to the claims have been considered and have been found persuasive in part (more specifically, with respect to the rejection of claims 3, 4, and 7 under 35 U.S.C. §112, first paragraph, with regard to *dry etching*... such recitation in these claims having been amended to *sputter etching*, which is supported by the specification,

Group Art Unit: 2872

emphasis added, as well as with regard to the rejection of claims 1, 2, 5, and 6 under 35 U.S.C. §112, second paragraph, in light of Applicants' suitable amendment of the claims. Accordingly the rejection of claims 3, 4, and 7 under 35 U.S.C. §112, first paragraph, has been withdrawn, as has the rejection of claims 1, 2, 5, and 6 under 35 U.S.C. §112, second paragraph) and unpersuasive in part (namely, with respect to the prior art rejection of the amended claims).

With regard to the prior art rejection of claims 1, 2, 5, and 6 under 35 U.S.C. §102(b) as being anticipated by Weber (an earlier patent to the same invention as that disclosed in the 5,559,634 patent to Weber relied upon in the outstanding Office Action having been applied in the present Office Action), Applicant argues that Weber fails to disclose a teaching wherein a layer has a variable thickness. The Examiner respectfully disagrees. Please refer to column 4, lines 4-9 in the '634 Weber patent, wherein a teaching of variable layer thickness is explicitly disclosed. This teaching by Weber directly contradicts Applicants' further assertion that "Weber strictly discloses a fixed uniform thickness for layers 20 and 22 of optical stack 16.

With regard to the rejection of amended claims 3, 4, and 7 under 35 U.S.C. §103(a) as being unpatentable over Weber in view of Merrill et al., the Examiner notes that Applicants seek to distinguish the instant invention from that of the prior art based on the alleged lack of disclosure by Weber of a teaching of a layer having variable thickness. In light of the foregoing, this argument is unavailing.

Group Art Unit: 2872

Conclusion

Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Group Art Unit: 2872

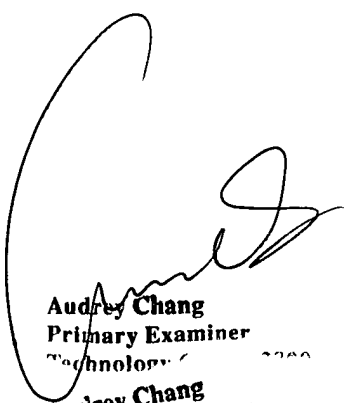
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (571) 272-2311. The examiner can normally be reached on Monday-Friday, 9:00 A.M. to 6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn, can be reached on (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.H.C.
Craig H. Curtis
Group Art Unit 2872
7 February 2005



Audrey Chang
Primary Examiner
Technology Center 2800
Audrey Chang
Primary Examiner
Technology Center 2800